INNOTRONICS MODEL 3400

DUAL DRIVE SUB-SYSTEM

STAND-ALONE DUAL DISKETTE DRIVE SYSTEM

The INNOTRONICS 3400 Dual Diskette Subsystem is offered for systems designers who want to customize their system. It saves you money as well as allowing you to optimize your diskette subsystem performance. Interfacing your computer to this subsystem may be handled easily by you utilizing one of the many good single or double density, floppy disk controllers available. This technique enables you to have the finest floppy disk available married to a controller which best meets your requirements. There is no need to compromise quality or functions.

Additional versatility and savings can result from our modular concept of the 3400 system. For example, you may build up your system as your requirements increase. We offer diskette drives ready to operate on a bench or tabletop. Our 400 Series drives come with a cover to the electronics and the drive mechanism, and are relatively protected from accidental damage. At some future time you could procure our dual drive cabinetry, power supplies, etc., ready for 19" rack mounting. For tabletop, stand-alone applications, a customized, hand-crafted solid wood enclosure is available to house the rack mountable dual drive subsystem. This handsome cabinet comes in walnut, cherry, oak or mahogany. Space is also provided inside the 3400 for mounting a controller or single board processor.

AVAILABLE WITH OR WITHOUT CONTROLLER

The cabinet is designed and fully engineered specifically for the INNOTRONICS Model 410/420 diskette drives. It is not a modified standard cabinet. Features include keyed, color coded, and quick disconnect industrial cabling for power and signal interfacing. The pleasing wooden enclosure complements all home and office environments.

The standard Model 3400 consists of:

- Two horizontally mounted drives.
- Heavy Duty ⅛ inch metal.
- Integral DC power supplies.
- AC line filter, fused.
- Fully engineered and tested forced cooling.
- Cherry or walnut wood cabinet from stock.
- Oak or mahogany available on request.

Optional controllers are available to interface with the S-100 PDP-8, PDP-11, LSI-11 and other host systems. Some can be installed in the same cabinet housing the dual drive subsystem.

3400-F

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SPECIFICATIONS

Mechanical

Wood ..... Solid ¾" thick walnut or cherry standard. Others available.
Weight ..... 70 pounds
Dimensions
Dual Drive with PS .. 10" H x 17" W x 17" D
Wooden Cabinet .... 12" H x 20½" W x 18¾" D
Cabinet Front Panel 10½" H x 19" W
Mounting hardware provided for optional controller or single board processor.

Environmental

Temperature ..... 50°F to 100°F.
Relative Humidity ..... 20 to 80%

Electrical

Input Power ..... 115 VAC, 60 Hz, 2 amps
DC Power Provided .. Internal supply generates regulated +24V, +5V and -5V for operation of dual drives.
Protection ..... Overvoltage and current foldback.

Dual Drives

Drives consist of two INNOTRONICS Model 410 or 420 floppy diskette drives with optional electromechanical interlock, automatic write protect, automatic step disable and head unload time outs included.

3400
RACK MOUNTED MODEL

BUILDING BLOCK CONCEPT SAVES YOU MONEY

YOU PROVIDE			INNOTRONICS PROVIDES						MODEL NO.
CONTROLLER	ENCLOSURE	POWER SUPPLIES	DRIVE A	DRIVE B					410/420
CONTROLLER	ENCLOSURE		DRIVE A	DRIVE B	POWER SUPPLIES				410/420 400-2046
CONTROLLER			DRIVE A	DRIVE B	POWER SUPPLIES	SHEET METAL ENCLOSURE FOR 19" RACK MOUNTING			3400
CONTROLLER			DRIVE A	DRIVE B	POWER SUPPLIES	SHEET METAL ENCLOSURE	WOODEN CABINET FOR TABLE TOP FOR DESK TOP		3400-F
			DRIVE A	DRIVE B	POWER SUPPLIES	19" RACK OR DESK TOP ENCLOSURE		CONTROLLER	SPECIAL ORDER
							WOODEN CABINET FOR TABLE TOP FOR DESK TOP		*400-2047

*Converts 3400 to 3400-F

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MODEL 410 / 420 FLOPPY DISK DRIVE

MODEL 410 SOFT SECTORED IBM COMPATIBLE
MODEL 420 HARD SECTORED

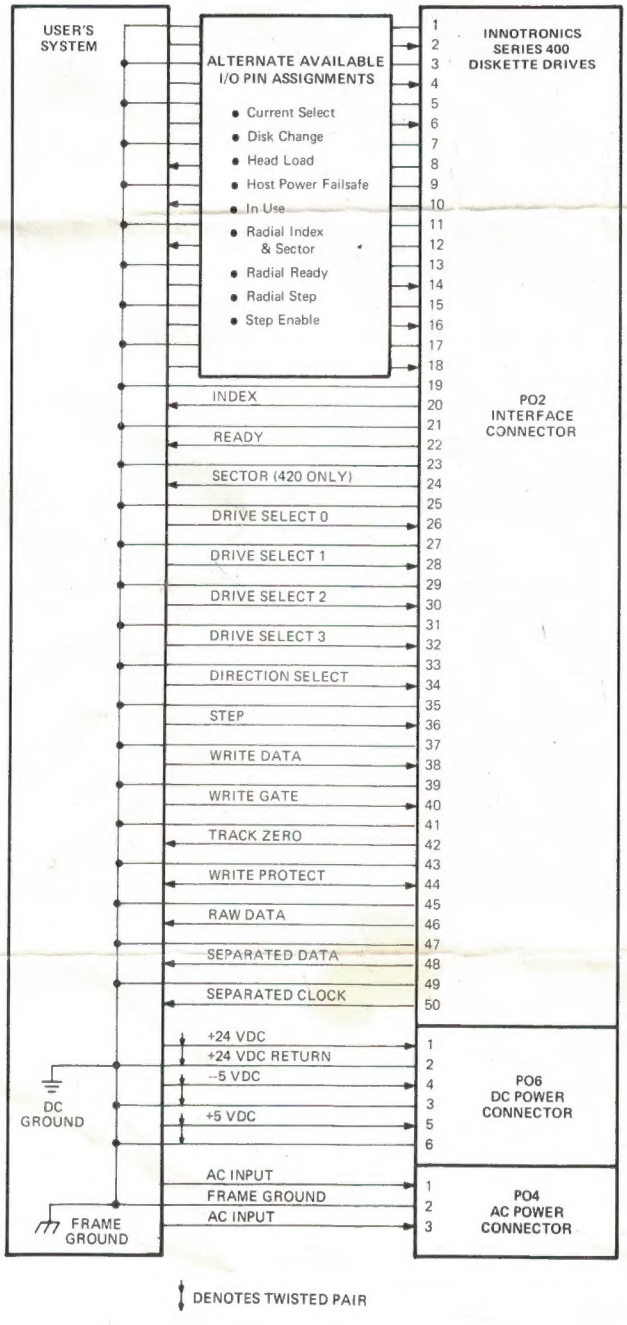
MECHANICAL FEATURES

- **FILTERED AIR OPERATING ENVIRONMENT**
  Minimizes Contamination / Improves Reliability
- **SINGLE SIDE ACCESSIBILITY**
  Simplifies Installation & Maintenance
- **TARGETED MEDIA LOADING**
  Facilitates Diskette Insertion
- **ELECTRO-MECHANICAL DOOR INTERLOCK***
  Insures Correct Diskette Loading
- **INTERLOCK OVERRIDE BUTTON***
  Permits Closing Door Without Power On Or Diskette Inserted
- **DOOR LOCK***
  Prevents Opening Door When In Use
- **6 POSSIBLE ACTIVITY INDICATORS***
  Head Loaded, Ready, Selected, In Use, Write Protected, And Diskette Load
- **FLEXIBLE MOUNTING CONFIGURATIONS**
  2 Horizontally Or 4 Vertically In Standard 19" Rack, Without Factory Adjustment. Multiple Bezel Configurations Available
- **PATENTED "WEAR-FREE" DISKETTE HUB**
  Media Life Tested To Over 100,000 Insertions
- **HEAVY DUTY MACHINED CASTING**
  Assures Stable Alignment

ELECTRICAL FEATURES

- **PROPRIETARY DATA SEPARATOR DESIGN**
  35% Greater Margin Than Closest Competitor
- **AUTOMATICALLY TIMED TUNNEL ERASE**
  Assures Greater Data Integrity
- **SINGLE AND DOUBLE DENSITY ABILITY**
  Due To High Resolution Head From A World Leader In Head Technology
- **SELECTABLE WRITE CURRENT**
  Assures True IBM Compatibility
- **SELECTABLE SECTOR COUNT****
  8, 16 or 32 Sectors Per Track
- **AUTOMATIC HEAD UNLOAD TIME OUT***
  Minimizes Head & Media Wear & Latency
- **AUTOMATIC STEP DISABLE TIME OUT***
  Decreases Temperature Rise & Power Consumption
- **BINARY CODED DEVICE SELECT***
  Up To Eight Drives
- **HOST POWER FAILSAFE***
  Prevents Execution Of Erroneous Commands
- **3 POSSIBLE WRITE PROTECT CONFIGURATIONS***
  Diskette, Switch, or Software Controlled

ELECTRICAL INTERFACE CONNECTIONS



- **RIBBON CABLE OR TWISTED PAIR COMPATIBLE**

*410/420 OPTIONAL FEATURE

**420 OPTIONAL FEATURE

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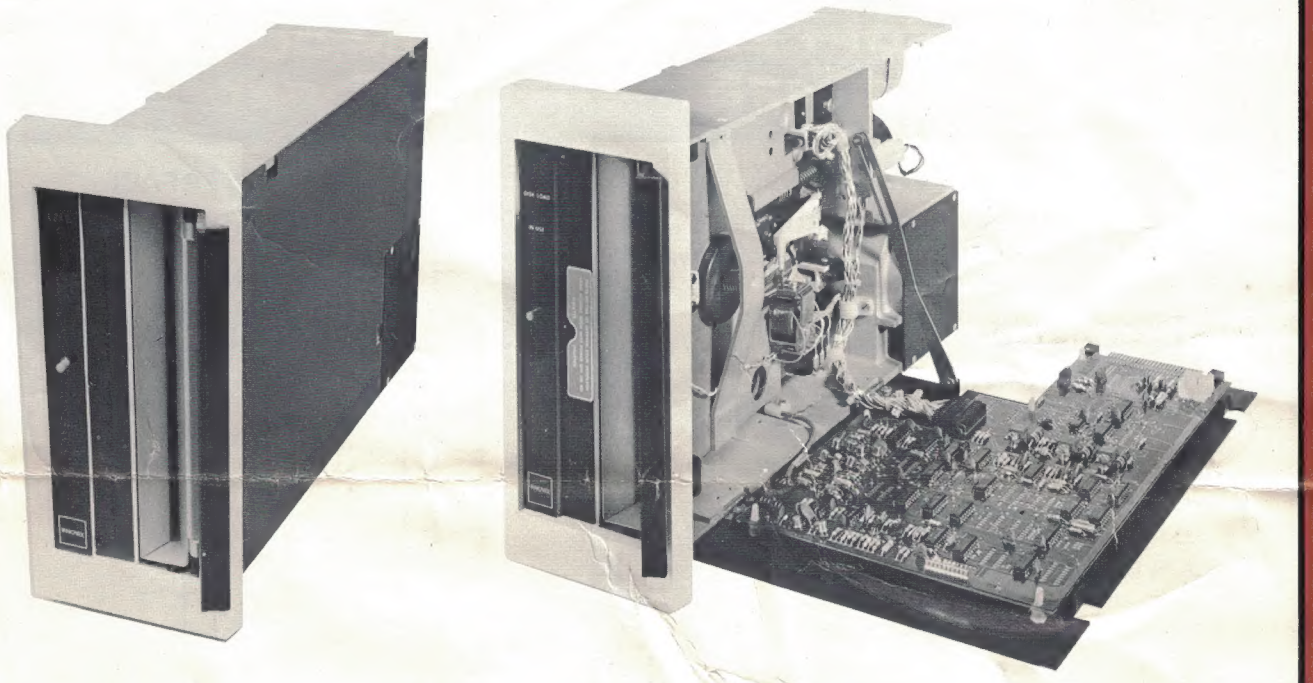
TECHNICAL DATA



MECHANICAL CHARACTERISTICS

Height (without Bezel):	9" = 228.6 mm
Also available	8-13/16" = 223.8 mm
Width:	4-3/8" = 111.1 mm
Depth:	14" = 335.6 mm
Weight:	14 pounds
Ambient Temperature:	50^{o}F-115^{o}F = 10^{o}C-46^{o}C
Ambient Humidity:	18-80%
Power Dissipation:	230 BTU/Hour Maximum 120 BTU/Hour Typical
Rotation Speed:	360 RPM ±1%

RELIABILITY CHARACTERISTICS

MTBF:	Greater than 12,000 hours
MTTR:	Under 30 minutes
Preventive Maintenance:	None required in office or computer environment

Head Life:

Typically greater than 18,000 hours under normal operating conditions, on Innotronics approved Diskettes.

Error Rate:

Soft (Recoverable) less than 1 in 10^{9}
Hard (Non-recoverable) less than 1 in 10^{12} Est.
Seek - less than 1 in 10^{6} seeks.

Media Life: (Innotronics approved Diskettes)

Passes per track: 3.5×10^{6}
Insertions: 50,000+

ELECTRICAL CHARACTERISTICS

Input AC Power:	50/60 Hz ± 1 Hz simple phase
410/420	85/115/132 VAC @ 0.2 amps, typical
411/421	170/230/264 VAC @ 0.1 amps, typical
412/422	80/100/120 VAC @ 0.25 amps, typical
Input DC Power:	+5V ±0.25V @ 800 mA, −5V ±0.25V @ 75 mA, (option −12V, −15V) +24V ±2.0V @ 1.4A,

Capacity (unformatted):	Density: Single	Density: Double
Recording Method	FM	MFM or M^{2}FM
Bits Per Inch (Inner Track)	3,200	6,400
Bits Per Track	41.7×10^{3}	83.4×10^{3}
Bits Per Diskette	3.2×10^{6}	6.4×10^{6}
Bytes Per Diskette	400,000	800,000

Density:	
Recording Density	13,262 Flux Reversals/Radian
Inner Track Radius	2.029-inches
Number of Tracks	77
Track Density	48 tracks/inch
Transfer Rate:	
Single Density	250,000 bits/sec.
Double Density	500,000 bits/sec.
Access Time:	
Track to Track	6 milliseconds
Settling Time	8 milliseconds
Latency (Average)	83 milliseconds
Head Load Time	30 milliseconds

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Thank you for your interest in our Series 3400 Dual Drive Subsystems. Enclosed are Data Sheets for our Model 3400 and our Model 410 Disk Drive.

This system has been custom designed and manufactured by us for our Floppy Drives to yield the highest quality product of its type on the market, and priced to yield the best value.

Model 3400 (Rack Mounted Version)	$1555
Model 3400F (Desk Top Version)	$1655
Model 3410 (With S-100 Controller).	$1800
Model 3410F (With S-100 Controller).	$1900

All systems include a complete 8 ft. signal cable assembly ready to plug into any controller.

Model 410 Diskette Drive (Soft Sector)	$ 495
Model 420 Diskette Drive (Hard Sector)	$ 505

Options:

*(106) Write Protect	$ 10
*(102) Electro-Mechanical Interlock	$ 10
(111) Data Separator	$ 10
*(133) Automatic Stepper Power Disable.	$ 5
*(123) Automatic Head Unload Delay.	$ 5
Bezel: (Black or White)-(Vertical or*Horizontal)	N/C

*These options are included in the Model 3400 configuration.

Terms: Prepayment (Personal Check or Money Order Acceptable)
Delivery: 30 Days ARO
Shipping Charges via UPS - C.O.D.

When placing order, please identify the controller if you are providing your own.

If you have any questions that have not been answered by the enclosed, don't hesitate to contact us at (617) 259-0600. We would be most happy to hear from you.

Harry Scheuer

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BRIEF PROFILE OF OUR HISTORY AND PHILOSOPHY

The original Innovex Drive and Diskette were designed by us in 1970, and various improved versions have been continuously manufactured since 1972.

In 1972 a cash settlement was received from IBM for which we abandoned our "Diskette" trademark application.

During 1973 we received the IR-100 Award of 1972 from Industrial Research, Inc. for our Series 100 Diskette Drive. This Award is issued each year to the 100 most significant new technical products.

Since 1973 we have been manufacturing the IBM "Floppy" configuration (Series 200 and 400) of the Diskette Drive in both the IBM Compatible and Hard Sector versions.

During the period 1973 to 1977, it became increasingly clear that all manufacturers of Floppy Disk Drives were concentrating on volume and volume pricing. Needless to say this always sacrifices quality and product support. Therefore in January of 1978 we decided to put the quality that we had originally designed in, back into the manufacture of our drives and stop concentrating on removing every dollar from the cost.

Today we feel that Innotronics is a very unique Diskette Drive company in that we are the only people truly focusing on the customer who demands the highest quality and reliability. This concept has steered us away from the extremely high volume customers, and more towards the market which requires consistently reliable performance from their equipment. We feel that one cannot take any risks with the most important job of a Diskette Drive, the integrity of the data it handles.

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